RESEARCH

Assessing Mental Health First Aid Skills Using Simulated Patients

Sarira El-Den, PhD, MIPH, BPharm (Hons I), Timothy F. Chen, PhD, DipHPharm, BPharm, Rebekah J. Moles, PhD, DipHPharm, BPharm, Claire O'Reilly, PhD, BPharm (Hons)

The University of Sydney, New South Wales, Australia

Objective. To evaluate mental health first aid (MHFA) skills using simulated patients and to compare self-reported confidence in providing MHFA with performance during simulated patient roleplays.

Methods. Pharmacy students self-evaluated their confidence in providing MHFA post-training. Two mental health vignettes and an assessment rubric based on the MHFA Action Plan were developed to assess students' observed MHFA skills during audio-recorded simulated patient roleplays.

Results. There were 163 students who completed the MHFA training, of which 88% completed self-evaluations. There were 84% to 98% of students who self-reported that they agreed or strongly agreed they were confident providing MHFA. Postnatal depression (PND) and suicide vignettes were randomly assigned to 36 students. More students participating in the PND roleplay took appropriate actions, compared to those participating in the suicide role-play. However, more students participating in the suicide role play assessed alcohol and/or drug use. Ten (71%) participants in the PND roleplay and six (40%) in the suicide roleplay either avoided using suicide-specific terminology completely or used multiple terms rendering their inquiry unclear.

Conclusion. Self-evaluated confidence levels in providing MHFA did not always reflect observed performance. Students had difficulty addressing suicide with only half passing the suicide vignette and many avoiding suicide-specific terminology. This indicates that both self-reported and observed behaviors should be used for post-training assessments.

Keywords: depression, suicide, simulated patient, role-play, health behavior

INTRODUCTION

Mental Health First Aid (MHFA) is defined as "the help provided to a person who is developing a mental health problem, experiencing the worsening of an existing mental health problem or in a mental health crisis. . .until appropriate professional help is received or the crisis resolves."[1] Developed in Australia in 2001, the MHFA program is designed for all members of the community, with approximately 1% of the Australian population having completed MHFA training.[1,2] MHFA training is now embedded in various health degrees, offered in over 20 countries and recommended by various organizations, such as the Quality Care Pharmacy Program (QCPP), a community pharmacy quality assurance program in Australia.[3,4] MHFA Australia has developed a tailored course called "Blended MHFA in the Pharmacy" for pharmacists and pharmacy staff, which satisfies QCPP requirements.[5] In Australia, The Pharmaceutical Society's Mental Healthcare Framework recognizes pharmacists as primary health care professionals who have an important role to play within mental health care.[6] Globally, the International Pharmaceutical Federation has urged members to include pharmacists as part of their "human resource development policy" so that "an increase by 20% of service coverage for severe mental disorders can be achieved."[7] Hence, it is essential that pharmacists are equipped with the necessary skills to help patients with mental health problems.

MHFA has been shown to have a positive impact on mental health knowledge, attitudes and self-reported behaviors, among various population groups, including pharmacy students.[8-11] Studies have used different self-report methods to assess participants' behaviors after completing MHFA training, such as confidence, intentions, and help provided.[8-10,12-17] However, research on observed performance is lacking. Psychologists have noted the shift from direct observation to "introspective self-reports, hypothetical scenarios and questionnaire ratings" to measure self-reported behaviors.[18] The increasing use of questionnaires asking people "what they have done, will do or would do" may be due to ethical and feasibility concerns;[18] however, various studies have illustrated

Corresponding Author: Sarira El-Den, Building A15, Faculty of Pharmacy, The University of Sydney, NSW Australia 2006. Tel: +61-2-86276417. E-mail: sarira.el-den@sydney.edu.au

discordance between self-reported and observed behaviors. For example, Tamburrino and colleagues found that medical students' self-reported preferences on an inventory did not reflect their abilities during interviews with simulated outpatients.[19] Jenner and colleagues reported a difference between health care professionals' observed hand hygiene behaviors and their self-reported practice.[20] Simulated patients provide a means of evaluating students' ability to "show how" they use their knowledge.[21] This form of assessment assumes that students "know" the content and "know how" to apply the skills they have learnt.[21] "Showing how" knowledge is applied is the third step in Miller's framework for clinical assessment.[21] It is only inferior to the last step in the pyramid entitled "does," which evaluates the "actions" taken by the student when he/she is working independently.[21] However, this final step of assessment is often "difficult to measure accurately and reliably."[21]

In light of this evidence, it is essential to incorporate observed behavioral measures of performance in studies that assess behaviors.[18] Incorporating performance feedback in simulated patient studies is also recommended.[22] Hence, this study has two objectives. The first is to evaluate the impact of MHFA training on pharmacy students' communication and behavioral skills during roleplays with simulated patients, and to provide immediate performance feedback on these skills. The second is to compare students' self-reported MHFA skills with observed performance during simulated roleplays.

METHODS

Fourth-year bachelor of pharmacy (BPharm) students in the final semester of their degree at The University of Sydney completed the MHFA training course, within their curriculum, delivered by an accredited MHFA instructor and registered pharmacist. Post-training, MHFA Australia emailed students a voluntary self-evaluation form.

Registered pharmacists, mental health researchers and an accredited MHFA instructor developed two depression vignettes based on the *Diagnostic and Statistical Manual of Mental Disorders*, 5th Edition (DSM-5) criteria.[23] One simulated patient was a first-time mother having difficulty breastfeeding and the other was a person struggling with a partner's death and having suicidal thoughts (Table 1). These vignettes were enacted by the tutors during the simulated patient roleplays. The simulated roleplay in this study was part of the students' Professional Practice unit, which required each student to perform eight different skills: handling a request for an over-the-counter medicine, handling a first-aid situation, providing discharge counseling to a patient going home from the hospital, answering a drug information query, dealing with a medication-related ethical dilemma, taking a patient's medication history and reconciling the medicines list, completing a Home Medicines Review (HMR), and providing part of a Disease Management Service. An HMR "involves the patient, their general practitioner (GP), an accredited pharmacist and regular community pharmacy."[24] During an HMR, "the pharmacist visits the patient at their home, reviews their medicine routine and provides their GP with a report" and a medicine management plan is agreed upon by the GP and the patient.[24] On the other hand, "disease management is an approach to patient care that coordinates medical resources for patients across the entire health care delivery system."[25,26]

There were 10 versions of each skill to be performed, rendering a total of 80 scenarios. Two of the first-aid scenarios, described previously in Table 1, were designed to allow students to implement the principles of MHFA. Other first-aid scenarios included asthma first aid, physical first aid, angina, hypoglycemia, wound care or anaphylaxis. Two pharmacists who had completed MHFA training acted as the simulated patients and provided performance feedback.

Table 1. Key Elements of the Mental Health Vignettes

Postnatal depression vignette – Sarah	Suicide vignette – Barbara/Ken[a]
Teary, stressed and crying;	Regular patient, hasn't been to the pharmacy for a while;
Has a 3-month-old baby;	Partner recently died from cancer;
Difficulty with breastfeeding, feels like a failure;	Requests doxylamine[b] – takes up to 4 at night but still can't sleep;
Recently moved to Australia, has little support and few friends;	Losing weight, no motivation, no energy, skipping work;
Has had depression previously;	"I can't see a future without my partner – I see no point in going on anymore;"
"I can't do this anymore – my baby would be better off without me."	"I no longer want to live, there is no point."

[a]Depending on the gender of the simulated patient
[b]Doxylamine is a sedating antihistamine used for insomnia and is available from community pharmacies in Australia without a prescription

After MHFA training, the 10 first-aid scenarios were randomly allocated through simulated patient roleplay during weekly tutorials. Students were not informed of their allocations prior to the tutorial. The 30-minute interaction involved an audio-recorded simulated patient roleplay, tutor assessment, self-assessment and on-the-spot performance feedback from an experienced tutor who had completed MHFA training and was a registered pharmacist in Australia.

A purpose-designed assessment rubric was developed based on the MHFA Action Plan (Table 2) and a scoring system developed by MHFA researchers.[27] Each item in the rubric was scored from 0 to 2 (0 points = incorrect, inappropriate or missing behaviors, 1 point = partial demonstration of skills, 2 points = full demonstration of appropriate skills).[27] Allocation of scores for each item was determined by consensus of all four authors, all of which are registered pharmacists and experienced pharmacy educators, one of which is an accredited MHFA instructor and two of which have completed MHFA training and are mental health researchers. The resulting 12-item rubric mapped to the MHFA Action Plan and was adapted for a community pharmacy context (Table 2). This rubric was used by the simulated patient to assess students' MHFA skills during the roleplays (audio recorded), to facilitate performance feedback by the simulated patient and for students to self-assess their own performance. To pass the assessment, students had to get at least 12 out of 24 marks and assess for suicidal thoughts. Other actions were also required to pass the assessment, based on MHFA guidelines.[4] For the suicide vignette, the simulated patient admitted to having suicidal thoughts and a plan in place. Therefore, the student had to take the appropriate action by immediately referring the simulated patient to the appropriate professional help, such as a general practitioner (GP) and ensure that the simulated patient was not left alone (eg, accompany him/her to the GP's clinic), to pass the assessment. For the PND vignette, it was necessary to inquire about suicidal thoughts; however, the simulated patient did not have current suicidal thoughts. Therefore, to pass the assessment and competently provide MHFA, it was necessary for the student to refer the simulated patient to appropriate professional help (eg, GP).

Table 2. Assessment Rubric Based on the Mental Health First Aid Action Plan – ALGEE [4]

ALGEE Item	Assessment Rubric[a]

Approach, assess and assist with any crisis	Approach the person appropriately
	Sit the person down in a private area
	Ask appropriate open-ended questions
	  eg, How long have you been feeling like this?
	Ask about suicidal thoughts
	  eg, Are you thinking about attempting suicide?
	Assess the risk of suicide
	  eg, Have you developed a plan? Have you been
	  using alcohol and other drugs?

Listen non-judgmentally	Listen non-judgmentally
	  eg, Avoid comments such as "get over it"
	Display empathy
	  eg,"I understand this is a difficult time for you"
	Display appropriate non-verbal communication
	  eg, hand gestures, eye contact

Give support and information	Give reassurance and appropriate information eg,"These feelings are common and can be treated"
Encourage appropriate professional help	Connect the person with the appropriate professional help eg, General practitioner, family member

Encourage other supports	Encourage the use of self-help tools
	  eg, Mental health websites
	Attempt to follow-up with the person
	  eg, Ask for their number

[a]Each assessment rubric item was 2 points multiplied by 12, which equaled 24

The post-training self-evaluations were analyzed using SPSS 22 (IBM, Armonk, NY). After data collection was completed, the same tutor who performed the 30 simulated patient role-plays listened to all 36 audio-recordings and re-scored them all. The results reported in this article are based on the scores of the audio-recordings to ensure consistency among the outcomes. They were also categorized as competent (or not) for key behavioral outcomes by assessing their ability to provide ALGEE, which stands for **a**pproach, assess and assist with any crisis; **l**isten non-judgmentally; **g**ive support and information; **e**ncourage appropriate professional help; **e**ncourage other supports.[4]

For any missing or unclear recordings, tutor marks were assumed to be accurate. Any discrepancies or ambiguities were discussed with the research team to reach a decision by consensus. Ethical approval was received from The University of Sydney Human Research Ethics Committee.

RESULTS

Between July and August 2015, 163 students completed MHFA training. Following the training, 143 (87.7%) students completed the self-evaluation form. Students' responses to the self-evaluation items are displayed in Table 3.

Simulated Roleplay

One tutor was the simulated patient in all 18 PND roleplays and 12 suicide roleplays (30 in total). This tutor also re-scored all of the roleplays based on the audio-recordings, upon which the results of this article are based. The second tutor was the simulated patient for six of the suicide roleplays. Thirty-six students were randomly assigned to receive either the PND (n=18) or the suicide (n=18) vignette. During the PND vignette, one assessment was not completed and excluded in the data analysis. Hence, data were only available for 17 of the 18 PND roleplays. Based on these criteria, 76.5% passed the PND vignette and 50.0% passed the suicide vignette. Table 4 shows student performance in applying the ALGEE process, as per the audio-recordings. In general, most students appropriately carried out the ALGEE actions; however, 14 (82%) students assigned to the

Table 3. Students' Self-Reported Confidence in Providing ALGEE (n=143)

Self-Evaluation Item	As a result of this training, I feel more confident that I can: n (%)				
	1 Strongly Disagree	2 Disagree	3 Uncertain	4 Agree	5 Strongly Agree
Recognize the signs that indicate that someone may be developing a mental health problem or experiencing a mental health crisis.	1 (0.7)	1 (0.7)	4 (2.8)	73 (51.0)	64 (44.8)
Approach someone who may be developing a mental health problem or experiencing a mental health crisis.	0 (0)	5 (3.5)	18 (12.6)	62 (43.4)	58 (40.6)
Ask a person whether they are having thoughts of suicide.	0 (0)	2 (1.4)	14 (9.8)	66 (46.2)	61 (42.7)
Listen to and interact with a person without expressing judgment about their situation.	0 (0)	2 (1.4)	8 (5.6)	45 (31.5)	88 (61.5)
Offer a person information and support about mental health problems.	0 (0)	1 (0.7)	4 (2.8)	63 (44.1)	75 (52.4)
Encourage a person to seek appropriate professional help.	0 (0)	0 (0)	6 (4.2)	49 (34.3)	88 (61.5)
Encourage a person to access other support.	0 (0)	2 (1.4)	4 (2.8)	57 (39.9)	80 (55.9)
Recognize and correct other people's misconceptions about mental health problems.	0 (0)	0 (0)	3 (2.1)	54 (37.8)	86 (60.1)

Table 4. Key Behavioral Outcomes During the Simulated Roleplay Audio-Recordings

ALGEE[4]	Actual Behavioral Outcome	Completed Partially or Fully n (%)	
		Postnatal Depression Vignette n=17	Suicide Vignette n=18
Approach, assess and assist with any crisis	Approached the patient appropriately	17 (100)	17 (94.4)
	Asked about alcohol and/or drug use	3 (17.6)	5 (27.8)
	Asked about suicidal thoughts	14 (82.4)	15 (83.3)
	Inquired about suicide using only non-suicidal self-injury terminology or mixed terminology[a]	10 (71.4)	6 (40.0)
	Asked the patient if they had thought about how or when they would attempt suicide (ie, inquired about a plan)*	3 (21.4)	14 (77.8)
	Asked about intentions to harm the baby	5 (29.4)	N/A
Listen non-judgmentally	Listened non-judgmentally	17 (100)	18 (100)
	Displayed empathy	17 (100)	18 (100)
Give support and information	Gave reassurance and appropriate information	16 (94.1)	15 (83.3)
Encouraged appropriate professional help	Took the appropriate action PND: refer to a health care professional Suicide: refer to a health care professional and don't leave the patient alone	15 (88.2)	9 (50)
Encouraged other supports	Encouraged self-help	15 (88.2)	14 (77.8)

[a]Among those who asked about suicidal thoughts

PND roleplay and 13 (72%) students assigned to the suicide roleplay did not ask the simulated patient about drug and/or alcohol use.

During both roleplays, it was often difficult to determine if the participants asked about suicidal thoughts, specifically, or self-injury, more generally. This is because 71.4% of participants in the PND roleplay and 40% in the suicide roleplay either completely avoided using suicide-specific terminology or used specific and non-specific terminology. Terminology that is non-specific to suicide and may indicate assessment of non-suicidal self-injury include terms, such as "hurt" or "harm." All participants who asked about self-injury, regardless of the terminology used, were given points for asking about suicide. However, to ask about suicide, specifically, Mental Health First Aiders must ask that person directly and must not avoid using the word "suicide."[4] To demonstrate appropriate language when referring to suicide, a Mental Health First Aider should use the terms "suicide" or "die by suicide."[4] Other appropriate examples of suicide inquiries include "Are you having thoughts of suicide?" and "Are you thinking about killing yourself?"

Terms that were considered to be non-direct included inquiries about harming, injuring, mutilating or hurting oneself or having thoughts of such actions, such as self-harm.[28] The term self-harm is not clearly defined and can refer to non-suicidal self-injury.[28] During the suicide vignette, six students either used multiple terms or used only non-suicidal terminology to assess suicidal thoughts or ask related questions, such as whether the simulated patient had a plan in place. Similarly, during the PND vignette, when inquiring about suicide, 10 students used multiple terms or only non-suicidal terminology. Hence, it was difficult to determine if these students were using the terms interchangeably to inquire about only suicide attempts or if they were inquiring about non-suicidal self-injury. Therefore, only 28.6% and 60.0% of students during the PND and suicide roleplays, respectively, inquired about suicide using exclusively suicide-specific terminology, such as "suicide," "killing," or "taking your own life."

DISCUSSION

This study presents findings on an important and often overlooked topic in the literature, evaluating observed performance following MHFA training, with the use of simulated patients. The post-training confidence level of participants in applying the MHFA action plan,

ALGEE, often differed from their observed performance. Only 28.6% and 60% of students assigned to the PND and suicide role-play, respectively, used non-ambiguous, suicide-specific terminology to directly ask about suicide. Moreover, students' abilities differed, based on the vignette, whereby a lower percentage of students were able to encourage appropriate professional help (88.2% vs 50%) and other support (88.2% vs 77.8%) for the suicidal simulated patient.

Students both underestimated and overestimated their abilities in providing MHFA. The self-evaluation questionnaire (Table 3) indicated that 84.0% of students agreed or strongly agreed that they felt confident in approaching someone developing a mental health problem or experiencing a crisis. However, during the simulated roleplay, 100.0% and 94.4% of students appropriately approached the patient for the PND and suicide vignette, respectively.

During the self-evaluation of confidence, 95.8% of students either agreed or strongly agreed that they felt confident they could encourage a person to seek appropriate professional help. However, this was an overestimation for the suicide vignette, whereby only 50.0% of students took the appropriate actions, which involved both referring to an appropriate health care professional and not leaving the simulated patient alone. Students also overestimated their ability to provide the simulated patient with access to other support, despite being taught about support such as Australian helplines and websites during MHFA training. Furthermore, participants receive a personal copy of the MHFA manual which contains these details. During the self-reported evaluations, 95.8% and 96.5% of students either agreed or strongly agreed that they felt confident they could encourage access to other supports and offer information and other support, respectively. However, only 88.2% and 77.8% encouraged self-help during the PND and suicide roleplays, respectively. The tendency to over- and underestimate in self-report measures has been demonstrated in other areas, including but not limited to job performance, weight perceptions and video game playing time. [29-31]

During the self-reported evaluation, 88.9% of students reported that they agreed or strongly agreed that they felt confident asking someone about suicidal thoughts. During the roleplay, 82.4% of those allocated to the PND vignette and 83.3% of those allocated to the suicide vignette inquired about suicide. So, it seems as though students did not over- or underestimate their ability to ask about suicidal thoughts. However, upon re-scoring the audio recordings, it became evident that the students' inquiries were often unclear as they used both suicidal and non-suicidal self-injury terminology. During

MHFA, students are taught not to avoid the word "suicide."[4] Nonetheless, among those who inquired about suicide, 71.4% and 40.0% of students either avoided suicidal terminology completely or used multiple terms (eg, "kill," "hurt," "attempt suicide" and/or "harm") throughout their suicide assessments for the PND and suicide roleplays, respectively. This made it difficult, at times, to determine whether they were addressing suicide attempts or non-suicidal self-injury. Students learnt about non-suicidal self-injury during MHFA training, hence, it is unclear whether students who asked about "harming" or "hurting" were referring to suicide attempts or non-suicidal self-injury. Furthermore, given the use of both suicide-specific and non-specific terminology, it was unclear if terms, such as "hurting" and "harming" were used interchangeably with suicide-specific terms, such as "suicide" and "killing," or if they were used to ask about non-suicidal self-injury. Moreover, even though both simulated patients clearly expressed that they were not feeling well and could have potentially had suicidal thoughts, over 15% of students did not ask about suicidal thoughts, at all. Collectively, these findings indicate that some participants did not feel confident or comfortable inquiring about suicidal thoughts.

These findings may indicate that students still felt uncomfortable providing help to suicidal persons post-training. This could be due to the myths and stigma associated with suicide. A recent study among medical students reported that only 49% of participants correctly answered "false" to the statement "people who talk about suicide rarely commit suicide."[32] Furthermore, both post-graduate and undergraduate medical students struggled with recognizing suicidal "signs," as demonstrated by a mean percentage correct of only 43% and 58%, respectively, on an instrument that measures suicide literacy.[32] In this study, students had completed MHFA training, which specifically addresses common suicide myths. MHFA participants are taught that "although some people think that asking about suicide can put the idea in the person's mind, this is not true."[4] Furthermore, MHFA training also addresses myths such as "someone who talks about suicide isn't really serious" and informs participants that suicidal persons may talk about suicide to express "how badly they are feeling."[4] Nonetheless, many students did not ask about suicide or used unclear terminology, indicating lower levels of skill acquisition as they could not "show how" they would apply the information they "knew" and self-reported that they "knew how" to use.[21]

During MHFA training, students receive extensive information on how to apply ALGEE for a person experiencing suicidal thoughts. On the other hand, even

though, they do receive similar detailed information on applying ALGEE on a person experiencing depression, they do not receive detailed information on how their approach should be modified when helping a person with PND, specifically. Nonetheless, 88.2% were able to take the appropriate actions and 88.2% were able to encourage self-help during the PND roleplay while only 50% and 77.8% were able to do so for the suicide roleplay, respectively. In addition, 29.4% of students assigned to the PND roleplay asked the simulated patient if she had any intentions of harming the baby, which is not something they learnt during training. Furthermore, even though the postnatal simulated patient did not have suicidal thoughts, 21.4% of students still inquired if she had a plan to attempt suicide in place. It appears that students were more capable and/or confident in assessing the simulated patient and encouraging appropriate actions in the PND roleplay than the suicide roleplay. This could have been due to the "crisis" nature of the suicide roleplay and the stigma surrounding suicide. However, there are various reports regarding the lack of concordance between self-reported and observed behaviors, regardless of the crisis nature of the behavior being examined. For example, a recent systematic review comparing direct and self-report measures of physical activity found self-report measures to be both higher and lower than direct measures, depending on the method used, rendering it difficult to find a "clear trend" among the differences.[33]

We found that students tend to under- and overestimate their skills when comparing self-reported behaviors with observed performance during simulated patient roleplays. This sheds light on the need to include direct observations of behaviors to comprehensively assess interventions. Use of simulated patients to evaluate participants' MHFA skills assesses students' abilities on a higher level of Miller's pyramid.[21] Not only does it ensure that participants know what MHFA is and know how to provide it, but it also evaluates their performance by allowing them to show how they would apply their newly learned skills.[21] Even after training, participants are often unable to adequately use some of the skills taught. Assessing training programs by allowing participants to show how they would use their knowledge or by observing their actions, if possible, can inform their modification and revision to ensure participants have mastered the skills that are taught.[21] Despite most students in this study appropriately carrying out the MHFA Action Plan, only 50% of students assigned to the suicide roleplay passed the assessment, while 76.5% of those assigned to the PND roleplay passed. This could indicate that health care students need further support handling patients at risk of suicide. Given that suicide is among the three leading causes of death among people aged 15-44, it is essential that primary health care professionals know how to recognize, approach, assess and assist those at risk of suicide.[4,34] Incorporating these skills into the curricula of health care students may potentially impact suicide rates. However, to ensure primary health care professionals are capable of providing such services, it is necessary to assess their skills after training.

Regardless of their performance, after the roleplay, all students were given immediate performance feedback by the simulated patient. Medical education research has shown that students who receive immediate feedback are more likely to agree that a standardized patient exercise provided them "with further insight into specific interviewing techniques" and "was a safe method...to work through...weaknesses" than those who did not receive immediate feedback.[35] Among pharmacists, providing feedback after simulated patient visits is an acceptable way to improve the "quality of over-the-counter consultations" and "for assessing current practice."[36] Furthermore, immediate feedback is appreciated among pharmacy staff as it allows them to recognize "specific areas for potential improvement" as it is focused around "real life practice."[37] Hence, incorporating immediate performance feedback in this study ensured that the simulated patient exercise was not solely a means of assessment, but also a way for students to improve their skills.[22]

Given that previous studies documenting improvements in behaviors have usually based their findings on self-reported behaviors, this study illustrates the potential for under- and overestimation of confidence in providing various MHFA actions when using self-report as the sole measure for behaviors. Despite these strengths, this study could have been improved by using a larger sample size of students to improve the generalizability of the findings. Furthermore, given that participants were pharmacy students, it is unclear if the findings are generalizable to Australian pharmacists. However, the students were in the final semester of their degree and were only months away from registering as intern pharmacists with provisional registration in Australia. Nonetheless, further research with varying participant groups is also warranted.

Another potential limitation which may have affected the students' performance was the use of tutors who were known to the students as simulated patients and that the numbers of scenarios delivered by the two tutors were not even. Hence, future study designs simulating real life environments in a non-academic setting using actors or consumers with a lived experience of mental illness may yield different results.

CONCLUSION

Although assessment of actual behaviors following MHFA training may be difficult to achieve, this study is among the first to evaluate health care professional students' observed behaviors using simulated patients. This has allowed for a more thorough evaluation of the skills participants acquired and their ability to apply the ALGEE actions after completing MHFA training. Since participants both under- and overestimated their ability to perform some of the key skills, after MHFA training, it is evident that direct observations of behaviors should supplement self-reported evaluations of interventions. By doing so, a higher level of knowledge acquisition and implementation can be ascertained, post-training.

REFERENCES

1. Mental Health First Aid Australia. What We Do at Mental Health First Aid Australia 2018. https://mhfa.com.au/about/our-activities/what-we-do-mental-health-first-aid.
2. Jorm AF, Kitchener BA. Noting a landmark achievement: Mental Health First Aid training reaches 1% of Australian adults. *Aust NZ J Psychiatry*. 2011;45(10):808-813.
3. Guthrey P. PPI increased requirements for eligibility: are you ready? *Excellence*. 2013. https://www.qcpp.com/docs/librariesprovider4/public-documents/resources/excellence/2013--janfeb.pdf?sfvrsn=2.
4. Kitchener BA, Jorm AF, Kelly CM. *Mental Health First Aid Manual*. 3rd ed. Melbourne, Australia: *Mental Health First Aid Australia*; 2013.
5. Mental Health First Aid Australia. Blended MHFA in the pharmacy. Parkeville, Victoria: MHFA Australia; 2018. https://mhfa.com.au/courses/public/types/blendedpharmacy.
6. Pharmaceutical Society of Australia. Mental health care project. A framework for pharmacists as partners in mental health care. Deakin West, Australian Capital Territory: Pharmaceutical Society of Australia; 2013.
7. International Pharmaceutical Federation. Intervention on provisional agenda item 13.3. Draft comprehensive mental health action plan 2013 -2020 The Hague: International Pharmaceutical Federation. www.fip.org/files/fip/WHO/interventionmh.
8. Hadlaczky G, Hokby S, Mkrtchian A, Carli V, Wasserman D. Mental Health First Aid is an effective public health intervention for improving knowledge, attitudes, and behaviour: a meta-analysis. *Int Rev Psych*. 2014;26(4):467-475.
9. Kitchener BA, Jorm AF. Mental health first aid training: review of evaluation studies. *Aust NZ J Psychiatry*. 2006;40(1):6-8.
10. Wong EC, Collins RL, Cerully JL. Reviewing the evidence base for mental health first aid. Is there support for its use with key target populations in California? RAND Corp.; 2015.
11. O'Reilly CL, Bell JS, Kelly PJ, Chen TF. Impact of mental health first aid training on pharmacy students' knowledge, attitudes and self-reported behaviour: a controlled trial. *Aust NZ J Psychiatry*. 2011; 45(7):549-557.
12. Mendenhall AN, Jackson SC, Hase S. Mental Health First Aid USA in a rural community: perceived impact on knowledge, attitudes, and behavior. *Soc Work Mental Health*. 2013;11(6): 563-577.
13. Kitchener BA, Jorm AF. Mental health first aid training for the public: evaluation of effects on knowledge, attitudes and helping behavior. *BMC Psychiatry*. 2002;2(10).
14. Yap MB, Jorm AF. Young people's mental health first aid intentions and beliefs prospectively predict their actions: findings from an Australian National Survey of Youth. *Psychiatry Res*. 2012;196(2-3):315-319.
15. Yap MB, Wright A, Jorm AF. First aid actions taken by young people for mental health problems in a close friend or family member: findings from an Australian national survey of youth. *Psychiatry Res*. 2011;188(1):123-128.
16. Jorm AF, Kitchener BA, Mugford SK. Experiences in applying skills learned in a Mental Health First Aid training course: a qualitative study of participants' stories. *BMC Psychiatry*. 2005;5:43.
17. Jorm AF, Blewitt KA, Griffiths KM, Kitchener BA, Parslow RA. Mental health first aid responses of the public: results from an Australian national survey. *BMC Psychiatry*. 2005;5:9.
18. Baumeister RF, Vohs KD, Funder DC. Psychology as the science of self-reports and finger movements: whatever happened to actual behaviour? *Perspect Psychol Sci*. 2007;2(4):396-403.
19. Tamburrino MB, Lynch DJ, Nagel R, Mangen M. Evaluating empathy in interviewing: Comparing self-report with actual behavior. *Teach Learn Med*. 1993;5(4):217-220.
20. Jenner EA, Fletcher BC, Watson P, Jones FA, Miller L, Scott GM. Discrepancy between self-reported and observed hand hygiene behaviour in healthcare professionals. *J Hosp Infect*. 2006;63(4):418-422.
21. Miller GE. The assessment of clinical skills/competence/performance. *Acad Med*. 1990;65(9 Suppl):s63-s67.
22. Xu T, de Almeida Neto AC, Moles RJ. A systematic review of simulated-patient methods used in community pharmacy to assess the provision of non-prescription medicines. *Int J Pharm Pract*. 2012; 20(5):307-319.
23. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*: *DSM-5*. 5th ed. Washington, DC; 2013.
24. Australian Association of Consultant Pharmacy. Home Medicines Review ACT: AACP 2016. https://www.aacp.com.au/accreditation/mmr/hmr.html.
25. Ellrodt G, Cook DJ, Lee J, Cho M, Hunt D, Weingarten S. Evidence-based disease management. *JAMA*. 1997;278(20):1687-1692.
26. The Boston Consulting Group. *The Promise of Disease Management*. Boston, MA: The Boston Consulting Group Inc.; 1995.
27. Rossetto A, Jorm AF, Reavley NJ. Examining predictors of help giving toward people with a mental illness: results from a national survey of Australian adults. *SAGE Open*. 2014;4(2).
28. Kelly CM, Jorm AF, Kitchener BA, Langlands RL. Development of mental health first aid guidelines for deliberate non-suicidal self-injury: a Delphi study. *BMC Psychiatry*. 2008;8:62.
29. Jaramillo F, Carrillat FA, Locander WB. Starting to solve the method puzzle in salesperson self-report evaluations. *J Pers Sell Manage*. 2003;23(4):369-377.
30. Park E. Overestimation and underestimation: adolescents' weight perception in comparison to BMI-based weight status and how it varies across socio-demographic factors. *J Sch Health*. 2011;81(2):57-64.
31. Kahn AS, Ratan R, Williams D. Why we distort in self-report: predictors of self-report errors in video game play. *J Comp-Mediated Comm*. 2014;19(4):1010-1023.

32. Chan WI, Batterham P, Christensen H, Galletly C. Suicide literacy, suicide stigma and help-seeking intentions in Australian medical students. *Australas Psychiatry.* 2014;22(2):132-139.

33. Prince SA, Adamo KB, Hamel ME, Hardt J, Connor Gorber S, Tremblay M. A comparison of direct versus self-report measures for assessing physical activity in adults: a systematic review. *Int J Behav Nutr Phys Act.* 2008;5:56.

34. World Health Organization. *Mental Health – Prevention of Suicidal Behaviours: A Task For All.* Geneva, Switzerland: WHO; 2016. http://www.who.int/mental_health/prevention/suicide/background/en/.

35. Doyle HL, Martindale J. The efficacy of standardized patient feedback in clinical teaching: A mixed methods analysis. *Med Educ Online.* 2004;9(1):4356.

36. Watson MC, Cleland JA, Bond CM. Simulated patient visits with immediate feedback to improve the supply of over-the-counter medicines: a feasibility study. *Fam Pract.* 2009;26(6): 532-542.

37. Xu T, de Almeida Neto AC, Moles RJ. Simulated caregivers: their feasibility in educating pharmacy staff to manage children's ailments. *International J Clin Pharm.* 2012;34(4):587-595.